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10/657,836

09/09/2003

Rongsheng Miao

50733/MJM/E349

1760

7590

03/22/2004

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EXAMINER

WONG, ERIC K

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/657,836

Applicant(s)

MIAO ET AL.

Examiner

Eric Wong

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to <sup>application</sup> communication(s) filed on 09 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/9/03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0903</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Inventorship***

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

### ***Drawings***

2. The drawings are objected to because labels and numerals are handwritten. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) submitted on 09/09/2003 has been considered by the examiner and made of record (note the attached copy of form PTO-1449).

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 5-6, 8-10, 14, 17-19 and 25-26 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent Number 6,642,068 to Hayes et al.

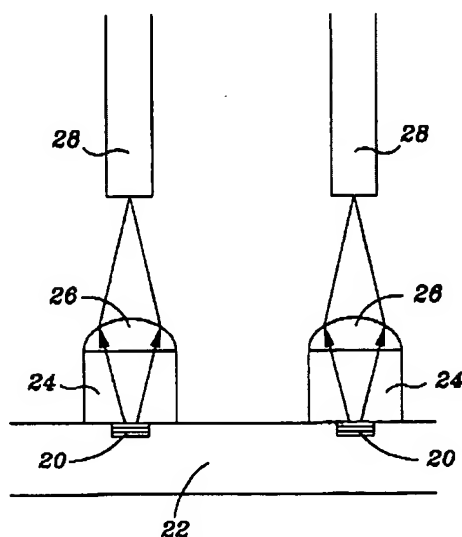
As to claims 1-3, 5-6, 18-19 and 25-26, Hayes discloses in figures 1a and 1b, an apparatus comprising an optical transmission medium (28) optically coupled to a photodetector in an optical coupling region and an optical thick film (24) disposed on said photodetector with an active area (20) in said optical coupling region and having a thick film refractive index between a first refractive index of air and a second refractive index of said photodetector.

As to claim 8, it is inherent that such an optical communications device would operate in one of 1310 or 1550nm as this is an optical communications standard.

As to claims 9-10, the optical transmission medium is that of an optical fiber.

As to claim 14, a lens (26) is provided.

As to claim 17, it would be inherent that a thick film placed between a photodetector and optical transmission medium would reduce the amount of light reflected between the two.



***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al. as applied to claim 1 above, and further in view of applicant's disclosure of prior art.

Hayes et al. discloses an optically coupled photodetector, but fails to explicitly disclose the material comprising silicon nitride.

It is noted that silicon nitride is commonly used for photodetectors and is evidenced by applicant's disclosure in page 4, lines 29-31.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use silicon nitride as a material for its availability and low cost.

8. Claims 7, 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al. as applied to claims 1 and 19 above, and further in view of common knowledge in the art.

Hayes et al. discloses an optical fiber with a smooth face optically coupled to a photodetector and thick film, but fails to explicitly disclose said film extending continuously between said face and said photodetector.

It is widely known in the art of optical coupling to have a said film extending continuously between said face and said photodetector in order to eliminate coupling errors due to airspace.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a said film extending continuously between said face and said photodetector in order to eliminate coupling errors due to airspace, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164.

9. Claims 11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al. as applied to claims 1 and 19 above, and further in view of United States Patent Application Publication 2004/0017977 to Lam et al.

Hayes et al. discloses an optical apparatus with a light exit from an optical fiber to a photodetector through a thick film, but fails to explicitly disclose the light exiting the optical fiber at a light delivery location formed on a sidewall of said fiber.

Light exiting the optical fiber at a light delivery location formed on a sidewall of an optical fiber is a known configuration and is also shown in Lam et al. (Figure 1L).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have light exiting the optical fiber at a light delivery location formed on a sidewall of an optical fiber as a known configuration to save space and to make the device more compact.

10. Claims 12, 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al. as applied to claims 1, 19 and 25 above, and further in view of preferred materials.

Hayes et al. discloses the use of a thick film made of a photosensitive polymer, but fails to explicitly disclose the film being formed of silicone. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use silicone as an alternative

material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

11. Claims 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al. as applied to claim 1 above, and further in view of an optimal range.

Hayes et al. discloses a thick film and photodetector, but fails to explicitly disclose a refractive index in a range as claimed.

It is typical in the art to use a refractive index range of 1.34 to 1.45 in a high index thick film and a range of 3.0 to 3.5 or 1.8 to 2.2 for a photodetector.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the ranges as claimed as they are typical in the high index thin film art and photodetector art in order to reduce coupling losses and optical errors.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al. as applied to claim 1 above, and further in view of an optimal range.

Hayes et al. discloses a thick film thickness of about 50 microns, but fails to explicitly disclose it being within a range of 10-30 microns.

It is noted that Hayes et al. does not have a definitive minimum for a thickness and that using another thickness would be obvious to one skilled in the art.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a range between 10-30 microns, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Art Unit: 2874

13. Claims 22, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al. as applied to claim 19 and 25 above, and further in view of a preferred configuration.

Hayes et al. discloses coupling an optical fiber to a photodetector via a thick film, but fails to explicitly disclose a smooth or polished surface.

It is well known in the art to keep surfaces as smooth as possible in order to keep optical coupling losses to a minimum.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to polish and keep the optical surfaces as smooth as possible in order to keep optical coupling losses to a minimum, which would enable more precise and error free optical communications.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Wong whose telephone number is 571-272-2363. The examiner can normally be reached on Monday through Friday, 830AM - 430PM.

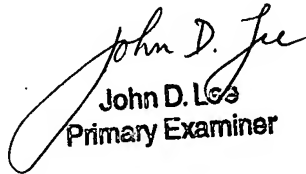
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Art Unit: 2874

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EW

  
John D. Lee  
Primary Examiner